

Mark Scheme

Sample Assessment Material

GCSE

GCSE in Mathematics Specification B
Foundation Tier

Unit 3: Number, Algebra, Geometry 2 (Calculator)

General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.
- Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear

Comprehension and meaning is clear by using correct notation and labelling conventions.

ii) select and use a form and style of writing appropriate to purpose and to complex subject matter

Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) organise information clearly and coherently, using specialist vocabulary when appropriate.

The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

Guidance on the use of codes within this mark scheme
M1 - method mark
A1 - accuracy mark
B1 - working mark
C1 - communication mark
QWC - quality of written communication
oe - or equivalent
cao - correct answer only
ft - follow through
sc - special case

Unit 3 Foundation Tier: Number, Algebra, Geometry 2

5MB3F				
Question	Working	Answer	Mark	Additional Guidance
1.				
(a)		Regular hexagon	1	B1 (accept hexagon)
(b)		C	1	B1 cao
		D and G	1	B1 for both, in any order
Total for Question: 3 marks				
2.	$(3 + 2) \times 48 = 240$ $240 - 35$	215	3	M1 for attempt to find total number of bags of crisps M1 for attempt to subtract 25 A1 cao 3
Total for Question: 3 marks				
3.		$4.0 \text{ m} \pm 0.1 \text{ m}$	4	M2 for drawing a right angled triangle (M1 for a sketch of a right angled triangle) M1 for drawing an angle of $72^\circ \pm 2^\circ$ A1 for answer of $4.0 \text{ m} \pm 0.1 \text{ m}$
FE				
Total for Question: 4 marks				
4.	$10 \times £5.99 = £59.90$ $10 \times 120 - 80 = 40$ $80 \times £0.99 = £79.20$ $40 \times £0.75 = £30$ $£79.20 + £30 = £59.90$	£49.30 profit	5	M1 for attempt to find original cost of water M1 for attempt to find cost of sale of first 80 bottles M1 for attempt to find number of remaining bottles $10 \times 12 - 80$ oe M1 for attempt to find cost of cost of sale of remaining bottles
QWC (i, ii, iii)				A1 cao QWC: Decision must be stated with clear working attributed correctly
FE				OR
	$5.99 \div 12 = 50\text{p (approx)}$ $10 \times 12 - 80 = 40$ $80 \times ("99 - 50") = £39.20$ $40 \times ("75 - 50") = £10$			M1 for $5.99 \div 12 = \text{approx } 50\text{p}$ M1 for attempt to find profit on sale of first 80 bottles M1 for attempt to find number of remaining bottles M1 for attempt to find profit on sale of remaining bottles
				A1 cao QWC: Decision must be stated with clear working attributed correctly
Total for Question: 5 marks				

5MB3F					
Question	Working	Answer	Mark	Additional Guidance	
5.					
(a)		Correct reflection	1	B1 cao	
(b)		Rotation 180° centre (-0.5, 1)	2	B2 for all 3 attributes B1 for any two of the three attributes	
Total for Question: 3 marks					
6.					
(a)	$64 \times 75\text{m} = 4800\text{m}$ $4800 \div 1000$	4.8 km	3	M1 for 64×75 M1 for " 64×75 " \div 1000 A1 cao	
(b)	$\text{Vol} = 25 \times 10 \times 2.5 = 625\text{m}^3$ 625×1000	625 000	3	M1 for attempt at finding the volume M1 for attempt to find the number of l in 1m^3 or $1\text{m}^3 = 1000\text{l}$ A1 cao	
Total for Question: 6 marks					
7.					
(a)	$32 \times \pounds 5.20$	$\pounds 166.40$	2	M1 for $32 \times \pounds 5.20$ A1 cao	
(b)	$\pounds 172.50 \div \pounds 5.75$	30 hours	2	M1 for $172.50 \div 5.75$ A1 cao	
Total for Question: 4 marks					
8.					
FE	Days 3 rd Apr to 30 th Jun is $28 + 31 + 30 = 89$ days Cost of days = " 89 " \times $\pounds 15.07\text{p} = \pounds 13.41$ Units used $10625 - 8963 = 1662$ Cost of units = $1662 \times \pounds 11.85 = \pounds 196.95$ $196.95 + \pounds 13.41$	$\pounds 210.36$	6	M1 for attempt to find the number of days M1 for standing charge = " 89 " \times $\pounds 15.07\text{p}$ M1 for attempt to find the number of units used M1 for attempt to find cost of units " 1662 " \times $\pounds 11.85\text{p}$ A1 for standing charge = " $\pounds 13.41$ " or unit cost = $\pounds 196.95$ A1 for $\pounds 210.36$ cao	
Total for Question: 6 marks					

5MB3F				
Question	Working	Answer	Mark	Additional Guidance
9.		Correct tessellation	2	M1 for extra hexagons in vertical plane or at points in horizontal plane or 1 hexagon meets another on a diagonal plane A1 for at least 6 hexagons tessellating correctly
				Total for Question: 2 marks
10.	(a)	3	1	B1 cao
	(b)	18	1	B1 cao
				Total for Question: 2 marks
11.	$\begin{array}{r} 220 - 120 \\ 100 \\ \hline 220 \end{array}$	$\frac{5}{11}$	2	M1 for $\frac{220 - 120}{220}$ oe A1 cao OR M1 for $1 - \frac{120}{220} (= \frac{100}{220})$ A1 cao
				Total for Question: 2 marks

5MB3F				
Question	Working	Answer	Mark	Additional Guidance
12.		Correct front elevation	3	B1 for rectangle of width 3 cm B1 for rectangle of height 4 cm B1 for hidden line shown dotted
Total for Question: 3 marks				
13. QWC (ii, iii) FE	For 100 units: N Eastern = £30 Pacific = £20 East Anglian = £20 For 200 units: N Eastern = £30 Pacific = £40 East Anglian = £30 OR Graphs plotted correctly	Correct conclusion with justifying working	5	B1 for calculating 2 correct points for Pacific M1 for attempt find 2 correct points on East Anglian A1 for two correct points on East Anglian M1 for calculating a point that allows a comparison to be made between 100 and 200 units C1 for correct conclusion QWC: Decision must be stated, and all comments should be clear and follow through from working out
Total for Question: 5 marks				
14. QWC (ii, iii) FE	$280 \times 0.175 + 280 (= 329)$ $420 \div 4 (= 315)$ $50 + 10 \times 27 (= 320)$	£315, Electrics	6	M1 for $50 + 10 \times 27$ M1 for $\frac{1}{4} \times 420$ or $420 \div 4$ oe M1 for $280 \times 0.175 + 280$ or 280×1.175 oe A2 for 320, 315 and 329 (A1 for any 2 correct of 320, 315 and 329) C1(dep on M2 A2) for 'Electrics' as final answer QWC: Decision must be stated, with all calculations attributable
Total for Question: 6 marks				
15.	$2(3x + 2x + 7) = 22$ OR $3x + 2x + 7 + x + x + 2x + x + 7 = 22$ $10x + 14 = 22$ $10x = 8$ $x = 0.8$ Area = $2.4 \times 8.6 - 1.6 \times 0.8$ OR $0.8 \times 08 + 2.4 \times 7.8$	19.36 cm ²	5	M1 for attempt to find an expression of the perimeter A1 for $10x + 14 = 22$ A1 for $x = 0.8$ M1 for attempt to find area A1 for 19.36
Total for Question: 5 marks				

5MB3F				
Question	Working	Answer	Mark	Additional Guidance
16.		4.08	3	B1 for 5.6644 or 81.8535(2772...) or 76.1(8912772...) or 18.67 B1 for 4.08(0831694) B1 cao
Total for Question: 3 marks				
17.	20% of £37 400 = £7480 50 000 – 37 400 – 6500 = £6100 40% of 6100 = £2440 ("7480" + "2440") ÷ 12	£826.67	5	M1 for attempt to find 20% of £37 400 M1 for attempt to find how much is taxed at 40% 50 000 – 37 400 – 6500 M1 for attempt to find 40% of "6100" M1 for monthly tax bill is ("7480" + "2440") ÷ 12 A1 for £826.67 cao
Total for Question: 5 marks				
18.	1189 ÷ 200 or 891 ÷ 200 = 5 and 4 or 20 squares 200 ² ÷ 2 = √(200 ² ÷ 2) = 141.4 Realising that another row of squares of side 141.4 fits or 891 ÷ 141.4 = 5 squares	90	5	M1 for attempt to divide 1189 ÷ 200 or 891 ÷ 200 M1 for 200 ² ÷ 2 M1 for √(200 ² ÷ 2) M1 for realising that another row of squares of side 141.4 fits or 891 ÷ 141.4 A1 cao for 90 triangles
Total for Question: 5 marks				
19.	(a) $3 \times 5 + 2 \times (-4)^2$ $15 + 2 \times 16$ $15 + 32$	47	2	M1 for $3 \times 5 + 2 \times (-4)^2$ A1 for 47
	(b) $P - 2b^2 = 3a$ $a = (P - 2b^2) \div 3$	$a = \frac{P - 2b^2}{3}$	2	M1 for $P - 2b^2 = 3a$ A1 cao
Total for Question: 4 marks				

5MB3F				
Question	Working	Answer	Mark	Additional Guidance
20. (a)		-3, -2, -1, 0, 1	2	B2 for -3, -2, -1, 0, 1 (B1 for -2, -1, 0, 1 or -2, -1, 0, 1, 2)
(b)		-1 < x ≤ 3	2	B2 for -1 < x ≤ 3 (B1 for -1 ≤ x ≤ 3 or -1 < x < 3)
Total for Question: 4 marks				

November 2009

For more information on Edexcel and BTEC qualifications
please visit our website: www.edexcel.org.uk

Edexcel Limited. Registered in England and Wales No. 4496750
Registered Office: One90 High Holborn, London WC1V 7BH. VAT Reg No 780 0898 07